

**CLAIMS**

1. Distributor box with at least one electronic circuit, in particular comprising microprocessor, memory and logic components and/or power semiconductor components, with a housing, comprising

5 a lower housing compartment (2),

10 at least one upper housing compartment (1, 51, 52, 53), which can be connected to the lower compartment (2, 55) in a tightly sealed, stable manner to provide a high degree of protection,

15 at least one transfer pin-and-socket connector, each of which comprises a first and a second connector part (21, 23, 61), the **first** connector part (23) of which is fixedly mounted in an **upper** housing compartment (1, 51, 52, 53) in such a way that when this upper compartment (1, 51, 52, 53) is set onto the lower compartment (2), the first connector part is brought into electrical contact with a **second** connector part (21, 61) of the transfer pin-and-socket connector, which fits together with the first part and is fixedly mounted in the **lower** housing compartment (2),

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wherein in the lower housing compartment (2) are mounted connecting devices or external terminal arrangements (22, 25) such as terminal strips or the like, so that a set of cables can be connected to at least the associated second pin-and-socket connector part (21, 61),

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35 and wherein the lower housing compartment (2) comprises a T-shaped, high tension cabling, such as for three-phase current, between two external terminal

arrangements and one external terminal arrangement for a hybrid cable (43) on the lower housing compartment (2),

5 and wherein the lower housing compartment (2) comprises a T-shaped cabling for a field bus between two external connecting devices on the lower housing compartment (2) and at least one second pin-and-socket connector part,

10 and wherein in at least one upper housing compartment (1, 51, 52, 53) there is mounted an electronic circuit that can be electrically connected to a control bus by way of a first and a second pin-and-socket connector part,

15 and wherein the lower housing compartment (2) comprises a hybrid pin-and-socket connector part (56) as an external means of connecting a hybrid cable with hybrid pin-and-socket connector part, which incorporates high tension and low tension leads,

20 and wherein the high tension leads of the hybrid cable (43) can be connected to at least one electronic circuit in an upper housing compartment (1, 51, 52, 53).

25 2. Distributor box according to Claim 1, **characterized in that** the low tension leads comprise brake leads to drive an electric motor (46) with brake and the brake leads can be connected to the electronic circuit that comprises a converter (45) and can be connected at least to control-bus leads.

30 3. Distributor box according to Claim 1, **characterized in that** the low tension leads are control-bus leads and the control-bus leads in the hybrid cable (43) can be connected to the control-bus leads of the

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electronic circuit that is electrically connected to the field bus.

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4. Distributor box according to one of the preceding claims,  
5      **characterized in that** a first upper housing compartment (51) comprises an electronic circuit that is electrically connected at least to the field bus and the system bus.

10      5. Distributor box according to one of the preceding claims,  
5      **characterized in that** a second upper housing compartment (52) defines a closed spatial region.

15      6. Distributor box according to one of the preceding claims,  
5      **characterized in that** a third upper housing compartment (53) comprises an electronic circuit that can be electrically connected to at least the system bus and brake leads.

20      7. Distributor box according to one of the preceding claims,  
5      **characterized in that** the lower housing compartment (2) comprises a braking resistance of a converter (45) and the braking resistance is connected to the electronic circuit of the third upper housing compartment (53).

25      8. Distributor box according to one of the preceding claims,  
5      **characterized in that** the transfer pin-and-socket connector in each case constitutes the only electrical connection between the cabling in the lower housing compartment (2) and the electronic circuit in the associated upper housing compartment (1, 51, 52, 53).

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9. Distributor box according to one of the claims 1 to 7, **characterized in that** the transfer pin-and-socket connector device in each case and a ground-connection cable constitute the only electrical connection between the cabling in the lower housing compartment (2) and the electronic circuit in the associated upper housing compartment (1, 51, 52, 53).

10 10. Distributor box according to one of the preceding claims, **characterized in that** the set of field-bus leads and/or control-bus leads also includes leads for supply voltages.

15 11. Distributor box according to one of the preceding claims, **characterized in that** the lower housing compartment (2) comprises a motor-protection switch (31, 54), in particular for the electrical disconnection of high tension leads.

20 12. Distributor box according to Claim 11, **characterized in that** the lower housing compartment (2) comprises an auxiliary switch, in particular for the electrical disconnection of motor-control leads and/or low tension leads, which is mechanically coupled to the motor-protection switch.

25 30 13. Distributor box according to one of the preceding claims, **characterized in that** the electronic circuit is designed so as to be addressable as a bus participant and can filter out from the field bus data that are destined for this address and translate them into a control-bus protocol and send the result by way of the control bus

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*Sub A27* to the field mechanism or mechanisms supplied from the distributor box.

14. Distributor box according to one of the preceding  
5 claims,  
**characterized in that** the electronic circuit comprises settable switches, such as DIP switches or the like, with which to set the field-bus address.

10 15. Distributor box according to one of the preceding  
claims,  
**characterized in that** at least one upper housing compartment (1, 51, 52, 53) comprises connector devices for the connection of external sensors and/or actuators.

15 16. Distributor box according to one of the preceding  
claims,  
**characterized in that** at least one upper housing compartment (1, 51, 52, 53) comprises a connector device for a control unit, in particular a computing device such as a PC or the like, in particular for balancing SPS programs, control programs, data or the like and/or devices for outputting and/or displaying data such as the states of sensors, actuators or drive mechanisms.

20 25 17. Distributor box according to one of the preceding  
claims,  
**characterized in that** at least one upper housing compartment (1, 51, 52, 53) comprises display devices such as LEDs and/or LCD displays or the like.

30 35 18. Distributor box according to one of the preceding  
claims,  
**characterized in that** at least one upper housing compartment (1, 51, 52, 53) comprises control elements

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19. Distributor box with at least one electronic circuit, in  
5 particular comprising microprocessor, memory and logic components and/or power semiconductor components, with a housing, comprising

10 a lower housing compartment (2),

15 at least one upper housing compartment (1, 51, 52, 53), which can be connected to the lower compartment (2) in a tightly sealed, stable manner to provide a high degree of protection,

20 15 at least one transfer pin-and-socket connector, each of which comprises a first and a second connector part (21, 23, 61), the **first** connector part (23, 61) of which is fixedly mounted in an upper housing compartment (1, 51, 52, 53) in such a way that when this upper compartment (1, 51, 52, 53) is set onto the lower compartment (2), the first connector part is brought into electrical contact with a **second** connector part (21, 61) of the transfer pin-and-socket connector, which fits together 25 with the first part and is fixedly mounted in the **lower** housing compartment (2),

30 30 wherein in the lower housing compartment (2) are mounted connecting devices or external terminal arrangements (22, 25) such as terminal strips or the like, so that a set of cables can be connected to at least the associated second pin-and-socket connector part (21, 61),

35 wherein in the housing a braking resistance of a

converter (45) is mounted in thermally conducting connection to the housing.

20. Distributor box according to Claim 19,  
5 **characterized in that** the braking resistance is mounted in the interior of the housing.

*Sub A37* 21. Distributor box according to at least one of the claims 19 to 20,  
10 **characterized in that** the housing is constructed at least in part for giving off heat, in particular comprises cooling fingers and/or cooling ribs (60).

22. Distributor box with at least one electronic circuit, in  
15 particular comprising microprocessor, memory and logic components and/or power semiconductor components, with a housing, comprising

20 a lower housing compartment (2),  
at least one upper housing compartment (1, 51, 52, 53),  
which can be connected to the lower compartment (2) in a tightly sealed, stable manner to provide a high degree of protection,

25 at least one transfer pin-and-socket device, each of which comprises a first and a second connector part (21, 61), the **first** connector part of which is mounted in an upper housing compartment (1, 51, 52, 53) in such a way  
30 that when this upper compartment (1, 51, 52, 53) is set onto the lower compartment (2), the first connector part is brought into electrical contact with a **second** connector part (21, 61) of the transfer pin-and-socket device, which fits together with the first part and is  
35 fixedly mounted in the lower housing compartment (2),

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5       wherein in the lower housing compartment (2) are mounted connecting devices or external terminal devices (22, 25) such as terminal strips or the like, so that a set of cables can be connected to at least the associated second pin-and-socket connector part (21, 61),

10       wherein a second upper housing compartment (52) together with at least the lower housing compartment (2) closes off from the surroundings or makes accessible an interior spatial region of the housing of the distributor box so that the connecting devices and/or the external terminal arrangements are accessible for connection of the cabling.

15   23. Distributor box according to Claim 22, characterized in that the second upper housing compartment (52) is the only part that must be released from the lower housing compartment (2) in order to make the connecting devices and/or the external terminal arrangements accessible for connection of the cabling.

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